4. 다음 부정적분을 $x = \sin\theta$로 치환하여 구하라

$dx = (\cos\theta)\,d\theta$

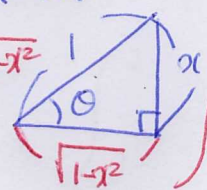
$$\int \sqrt{1-x^2}\,dx = \int (\cos\theta)\sqrt{1-\sin^2\theta}\,d\theta = \int \cos^2\theta\,d\theta = \int \frac{1+\cos 2\theta}{2}\,d\theta$$

(*) $\sin 2\theta = 2(\sin\theta)(\cos\theta)$

$x = \sin\theta \Rightarrow \cos\theta = \sqrt{1-x^2}$

$\theta = \sin^{-1}x$

$\left(-\frac{\pi}{2} < \theta < \frac{\pi}{2}\right)$



$$= \frac{1}{2}\theta + \frac{1}{4}\sin 2\theta + C$$

$$= \frac{1}{2}\sin^{-1}x + \frac{1}{2}x\sqrt{1-x^2} + C$$

5. 다음 정적분을 계산하라